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Energy Security

The paper on this subject for the Summit is being drafted by the European Commission. The US will provide an input to the EC on this subject.

The paper for tomorrow's NSC meeting is all right as far as it goes. However, it is deficient on two topics:

1. It says far too little about the most important energy development in several years, the erosion of the price of oil and its possible collapse within the next year or two. This development would greatly aid the Western economies and those of the oil importing less developed countries while seriously hurting those of the oil exporters such as the Soviet Union, Mexico, Nigeria, and Egypt, among many others. As a result, there would be a substantial restructuring of world trade flows. By the time of the Summit meeting in June, this might be Topic A on energy.

2. It underplays the Western European potential to develop its natural gas resources to the point where it might be made almost independent of Siberian, North African, etc., gas. It may or may not be premature for the President to raise this subject at the Summit, but the possibility of raising it ought to be discussed at the NSC meeting. The attached paper by Energy Advice (prepared, I believe, by Peter Odell who teaches in the Netherlands) lays out the general argument pretty well, although the cost figures look shaky to me.

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EA/SE

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ALTERNATIVE STRATEGIES FOR NATURAL GAS IN WESTERN EUROPE

An Executive Summary

Presented to:

Economics and Science Planning Inc
1200 18th Street NW
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USA

MAIN CONCLUSIONS

1. In spite of an increase in production over the 1981-85 period, proven and probable reserves of gas are likely to double between end-1981 and end-1985, to reach 10,200 billion cubic metres (380 trillion cubic feet) by that time. Half of these reserves will be in Norwegian areas. We consider that the peak annual production of 218×10^9 m^3 (8.1 TCF) planned for 1985-90 could physically be increased to at least 315×10^9 m^3 (11.7 TCF) without bringing the reserve/production ratio below the end-1981 level of 31 years.

2. The timing of such an increase would be phased between areas so that the British and Dutch sectors would be contributing from 1985 with the Norwegian contribution coming in the later 1980s. The main financial resources required would be for the UK gas gathering system ($1.8 bn at 1980 prices) plus $7.2 bn for six new UK field development projects plus similar investment for new Norwegian fields. Somewhat smaller amounts would be required for the development of Dutch off shore fields and increased capacity of on shore transportation systems to the rest of Europe.

3. US business would benefit heavily from an effort to expand North Sea gas production by 1.5 TCF per annum.

4. For various reasons, most north west European countries have lacked motivation to increase gas production above presently planned levels. There are however some signs that attitudes may be changing.

5. To encourage an increase in planned gas production levels, United States policies should be directed towards instilling greater awareness of European possibilities, promoting integration of development effort, changing the emphasis of EEC and other supernational programmes and guaranteeing gas replacements at no greater real cost.

6. It will be difficult for the US to persuade those planning to buy Siberian gas that the economic benefits of a switch to substitute sources would be greater than now foreseen. It may, therefore, be more advisable to aim for a compromise between political and economic benefit through a partial reduction in Soviet supplies and their replacement by the most easily attainable North Sea sources.

1. RESERVES, PRODUCTION AND PRODUCTION POTENTIAL

The essential components in the current, planned and potential use of the national gas resources are set out in Tables 1 and 1A. Figures are given in standard cubic metres of 9,381 kcal/m^3 and in trillion cubic feet (TCF) of 1000 BTU/ft^3.

Twenty years ago production was restricted to a number of small fields in West Germany and the Netherlands. Ten years ago production from the giant Groningen field in the Netherlands was in the process of rapid growth and four large gas fields in the United Kingdom sector of the Southern North Sea were in their early years of production. Since 1971 fields in other parts of the North Sea have been brought on stream but, even now, production from the Danish and German sectors has not yet started. There are, as yet, not even firm plans for the development of the gas reserves off-shore in the more northerly parts of Norway and only one field to the west of the United Kingdom is in production.

Cumulative production to date totals less than 25 percent of proven and probable reserves and there is a current (end-1981) Reserves/Production (R/P) ratio of over 30 years. Even the Netherlands, from where 50 percent of total gas to date has been produced, has an R/P ratio which is only a little under 30.

Current production/development plans imply a cumulative use in the four years 1982 - 85 of some 730 x 10^9 m^3 or 27 TCF, (44 percent as much gas as cumulative use to end 1981) and during this period all areas will contribute except Norway's northern areas. Planned growth in use, is, however, relatively small overall - by no more than 10 percent - and even these limited plans for expansion of production may be affected in part by demand limitations (arising out of gas pricing policies in some countries and legislative restrictions on gas use by the E.E.C.)

By 1985, however, on the basis of the successful exploration to date plus, the upward reappraisals of the resources in many of the reservoirs in the early stages of exploration; plus the discovery of new fields as a result of the continued exploration activities, the

remaining recoverable proven and probable reserves will then have doubled to over 10,000 x 10^9 m^3 or 372 TCF (after allowing for gas used from currently proven and probable reserves in the meantime). In spite of this rapid expansion of reserves, the sum of the post - 1985 planned peak rates of production from the six countries concerned will not exceed 220 x 10^9 m^3 (8.2 TCF). It is, indeed, unlikely that this rate will occur in any year before 1990 because individual countries peak rates of production will not coincide. Even assuming there was such a coincidence then the average post - 1985 R/P ratio would be almost 50 years.

The pattern and speed of evolution of the size of North West Europe's gas resources clearly gives plenty of scope for production ratios higher than those which are currently planned. The approximate 50 percent enhanced rate of potential recovery is still relatively modest compared with the likely available proven and probable reserves by the mid - 1980s. Indeed, the higher production rate still gives an R/P ratio of 33 years so it can barely be described as a rate of depletion which ignores the longer term needs of the region. Note that the additional ±100 x 10^9 m^3 (3.7 TCF) per year of potential production is also the sum of the extra output from the six countries and this too cannot be assumed to be time coincident. The additional production potential falls quite clearly into two time horizons, viz., first, additions which could be achieved by 1985 and, second, additions which would come in at a somewhat later stage but still prior to 1990. Most additional Dutch and British potential falls into the first category and that from the other countries into the second. The extra gas from the second group of countries could serve gradually to replace the extra gas from Britain or the Netherlands after 1985 if the latter countries then wished to reduce their production levels in the interests of resource conservation. In any event the production of an extra 40-50 x 10^9 m^3 (1.5-1.9 TCF) of gas per year from, say, 1984 to the end of the century would not generally deplete the reserves available; indeed, only about 30 percent of the potential proven and probable 1985 reserves would be used by the year 2000. But the chances of no more recoverable gas being found after 1985 are virtually zero as the search for reserves will then still be in its early stages. There is a high probability that annual additions to reserves after 1985 will continue to exceed even the higher rate of use (±300 x 10^9 m^3 or 11.2 TCF per year) indicated.

2. TIMING AND FINANCIAL RESOURCES NEEDED FOR ADDITIONAL PRODUCTION

2.1 Short-Term i.e. by 1985

a) The additional production of up to 25 x 10^9 m^3 (0.9 TCF) per year by the Netherlands would be based on:

i) more rapid depletion of the Groningen reservoir which is currently being operated at less than its potential capacity partly for policy reasons (discussed below) and partly because of the failure of gas use to develop as expected.

ii) speedier exploitation of more Dutch off-shore fields of which about 60 have been discovered and of which only about 15 are in production or being developed for production

b) The additional production of up to 15 x 10^9 m^3 (0.6 TCF) per year by the United Kingdom based on:-

i) the development of discovered but so far unutilized reserves in the southern portion of the North Sea

ii) the accelerated implementation of pipeline construction to collect the associated gas from oil fields in the central and sections of the United Kingdom North Sea

iii) the development of the large (140 x 10^9 m^3 or 5.2 TCF) Morecumbe Bay field (to the west of Liverpool) as a base load rather than a peak producing field.

2.2 Medium Term i.e. after 1985 and before 1990

a) Expansion of German, Danish and Irish production, as shown in the Table, to give up to 12 x 10^9 m^3 (0.45 TCF) per year additional gas.

b) Major additional developments of the Norwegian North Sea reserves and of reserves off more northerly parts of Norway through two major new pipeline systems. Examples of possible developments are:-

i) a line from north Norway through Sweden to the mainland of Europe

ii) a line from Block 31 in the North Sea (with up to 2000 x 10^9 m^3 or 75 TCF of reserves) to parallel the line from Ekofis to

iii) a line from the Sleipner area of the North Sea to the United Kingdom with interconnection from those to Belgium/France across the Channel.

Delivery through the additional systems could build up to 30 x 10^9 m^3 (1.1 TCF) a year by 1990.

2.3 Longer Term i.e. Past 1990 and into the 21st Century

Existing lines, presently planned extensions, plus the additional lines indicated above would give the potential for the long term delivery of a total of more than 300 x 10^9 m^3 (11.2 TCF) per year from the six countries. Continuing new, but by comparison, relatively modest investment in the extension and the intensification of the pipeline network to enable supplies to be maintained at this level would then be required to make possible the production of gas from new fields to compensate for the decline in production from fields which would become largely depleted in the meantime. This can be seen as "normal practice" in a province approaching maturity in its development.

2.4 Financial Resources Needed

In order to supply up to an increased 100 x 10^9 m^3 (3.7 TCF) from the sources indicated in Table 1, additional financial resources will be needed. Given government sanction for a more liberal depletion policy, the initial increases in production (from Groningen and Morecambe Bay, for example) could be achieved with very little investment. Thereafter, given a gas price up to 30 percent higher than the reported US $3.00 per million BTU delivered United Kingdom coast which was offered to and accepted by Mobil for associated gas from the Beryl field, sharp production increases can be expected from the United Kingdom southern dry gas fields. Such production could probably be financed from the internal resources of the leading oil companies involved.

The cost of a United Kingdom gas gathering system excluding production facilities to cope with maximum production of 12×10^9 m^3 (0.45 TCF) from all United Kingdom fields (gas condensation fields included) north of the 56th parallel was put at £1,010m (now $1,838m) at January 1980 values. Of this pipeline costs accounted for £725m ($1,320m) and onshore costs at terminals for £285m ($518m).

A typical North Sea Oilfield such as Northwest Hutton Field is estimated to cost about £590m ($1,070m) in capital cost and new oil/gas or gas condensate fields will not cost less in comparable terms. Since a gas gathering project would involve at least 6 new field development projects a total cost of £4 bn ($7.3 bn) is the minimum figure. To maximise output to achieve at least the stated aim of an additional 40×10^9 m^7 or 1.5 TCF from the North Sea, one must assume that the capital expenditure effort would be equal to at least half of the total investment expected on new fields in the 1980s.

In Norway, the focus for additional production is on Sleipner with reserves of at least 188×10^9 m^3 or 7 TCF from 8 to 9 structures. A minimum of 5 platforms is expected to be required at a cost of over $1.3 bn each plus development drilling of perhaps 100 wells at $6m each, plus a transportation system to shore.

Statoil claims, no doubt wrongly, that the cost of bringing new Norwegian gas to market will be $4.00 to 6.00 per million BTU at the field plus $1.50 to 2.50 per million BTU, to give at least $5.50 to 8.50 per million BTU at the beach. This figure however takes into account the presumed average costs of present and future reserves including those in the Arctic for which costs would be much higher than for Sleipner itself.

As a yardstick, the landed value of Frigg field gas in the United Kingdom is estimated at $3.40 per million BTU to give a rate of return on a conventional dry gas field of less than 10 percent.

In addition to the offshore investment described above, a switch of supplies from the Soviet Union to the North Sea would have investment implications for pipeline transportation of gas from the Netherlands and to Italy and Austria.

An expansion of about 15 x 10^9 m^3 (0.56 TCF) per annum in the Netherlands' export capacity above the present level of 50 x 10^9 m^3 (1.9 TCF) would be necessary if the total production from the Netherlands were to rise to 105 x 10^2 m^3 (3.9 TCF) since domestic demand is unlikely to rise much above 40 x 10^9 m^3 (1.5 TCF). Similarly Italy's plan to import 8 x 10^9 m^3 (0.3 TCF) per year from the Soviet Union could not be replaced by North Sea sources unless the present export capacity from the Netherlands to Italy (6 - 7 x 10^9 m^3) (0.22 - 0.26 TCF) were more than doubled.

3. EQUIPMENT - SOURCES AND FINANCING

In terms of engineering and design business and of involvement in manufacture of components and sophisticated hardware from production well to terminal, United States companies will be heavily involved in all sectors of the North Sea. The claimed share of 70 percent or more of United Kingdom firms in total offshore business is accurate only when it is realised that the definition of United Kingdom firms includes subsidiaries of United States and other foreign companies and excludes imports of foreign equipment by any of those companies winning the orders. In short, it may be expected the United States business would benefit heavily from an effort to expand North Sea gas production by the volumes discussed above.

This Section and 2.4 will be expanded in the final version of our report.

4. ATTITUDES OF NORTH WEST EUROPEAN GOVERNMENTS TOWARDS AN INCREASE IN GAS PRODUCTION

In order to understand present attitudes of North West European Governments towards an increase in gas production, it is necessary to set out the reasons for the failure to recognise and utilise gas resources in the area:

(a) defensive and protectionist attitudes in the gas industry

(b) equivocal attitude of the oil industry with gas production and excess refinery, distribution and transport capacity for oil

(c) lack of understanding of relative field size, discoverable reserves and price elasticity of supply

(d) interests and pressure groups (eg coal, electricity, EEC/nuclear industry, conservationists) working against increased gas development

(e) no effective gas lobby

(f) nationalist considerations inhibiting integrated gas development

(These points will be discussed at greater length in the final report.)

Specific national attitudes to levels of gas production can be summarised as follows:

4.1 West Germany

Unlike other West European countries, West Germany has allowed its gas reserves to be produced in a recognisably commercial way, ie on the basis of an approximate 20 year R/P ratio to the context of which exploration and appraisal has kept the discovery of new reserves moving along at a level sufficient to sustain a production level of 20×10^9 m^3 (0.75 TCF) per year. However, natural gas production is accorded a fairly low priority in energy policy planning. The latest policy document of the

Federal Government (November 1981) forecasts increasing demand for gas, a maintenance of the present indigenous production level (there is no mention of German offshore gas) and the need for a diversification of supply sources. The Government has now undertaken to oppose officially any move by gas exporters and importers to link prices to crude oil - as this would reduce demand, which would be contrary to Government policy.

A recent (1981) survey of gas (and oil) prospects indicates that reserves of onshore gas can be expected to continue to grow even if likely new 'plays' are ignored. The German sector of the North Sea has been disappointing but gas has been found (although the quality is poor) and the search is to be renewed. There has been little national encouragement of the exploration/exploitation effort offshore, but nevertheless there is a high probability that West German production could, by the mid 1980s, increase above its current and expected levels.

4.2 Denmark

The main constraint on the development of Danish natural gas production was the monopoly right granted, almost 20 years ago, to the single A P Møller group over oil and gas exploration and exploitation over the whole of the country's sector of the North Sea. This Group, having found gas with a very modest exploration effort, was not willing to produce it because of more attractive outlets for the investment which would have been involved on the part of one or more of the Group's member companies. Successive Danish governments felt themselves unable to intervene for legal reasons and thus the beginning of Danish gas production was held up for over a decade. It is, indeed, only due to start in 1983/84 on the basis of discoveries made many years ago.

The initial development is a modest one, in terms of sales from production, but it is almost certain to expand as exploration is now being opened up to other companies in the areas that the Møller Group has been obliged to give up. The lack of production has inhibited Danish efforts to consider the use of gas in its energy economy and this also meant that the country (together with Sweden) lacked interest and motivation for bringing pressure to bear on Norway in order to secure

gas production from the Norwegian North Sea dedicated to Danish (and Swedish) use. Now, however, with the construction of first, the Danish offshore pipeline system (with a capacity well in excess of immediate prospects for production from Danish waters); and second, a national gas transmission system (covering all the main cities and towns and stretching across to Copenhagen on the east side of the country), there is positive interest in a link to a pipeline from Norwegian production. Indeed, in addition to this providing extra supplies for Denmark itself, it has already been agreed with Sweden that Norwegian gas be transmitted through the system for delivery to Sweden (this has involved a Swedish contribution to the capital cost of the trunk-line) and to Germany. This system (except for the Norwegian connection) is already under construction and, by 1985, will provide the infrastructure base for a supply well in excess of the plans for gas use by the countries concerned: political commitment to the expansion and success in persuading Norway to co-operate are the only remaining missing elements.

4.3 The Netherlands

Dutch policy makers have developed a guilt complex about the way they allegedly 'allowed' Dutch gas production to increase so quickly in the late 1960s and the early 1970s and permitted it, moreover, to be sold at 'bargain basement prices' to all comers. The accuracy of the allegations is far from the truth as Dutch gas was priced to the oil market (except for some limited sales to Italy for political reasons, viz the idea of the then Foreign Minister Luns - now NATO Secretary General - that the supply of cheap Dutch gas would inhibit Italy from buying Soviet gas then on offer) in the context of constraints by the producers (Shell and Exxon) on the rate of supply from the Groningen field. Nevertheless, the accusations of 'profligacy' and of generating the so-called 'Dutch disease' (the use of gas revenues to boost living standards in general and social welfare provisions in particular) have stuck and have produced as a reaction a policy which has 'constrained supply' as its central theme. Another factor involved in the evaluation of this attitude was the influence of the 1970s Club of Rome and other reports on resource scarcity and the ethical need to conserve the limited supplies for future generations.

Thus, exports additional to the maximum $50 \times 10^9 m^3$ (1.9 TCF) per year already agreed have been prohibited and internal gas use has been deliberately cut back by reducing (or even eliminating) its use for electricity generation and for industrial steam raising. Gas production has thus fallen away from the level of the late 1970s and in the nationally planned future gas use system presently proven/probable reserves, not required to cover committed exports, are allocated to ensure the availability of gas to residential/commercial users for the period up to 2010. In particular, gas from the Groningen field is to be held "in reserve" and its production cut back even more sharply so that it will be replaced by the use of higher cost resources from smaller fields (note the essentially non-economic thrust of this approach). Meanwhile, however, the concept of policy which requires the development of the alternative small, higher cost fields is thwarted by bureaucratic delays in the award of production licences (which can take up to three years to achieve); by environmental and local opposition to the development of some of the fields and/or their associated pipelines; and by evolving government tax policies which threaten the viability of some of the potential developments all of which requires the detailed approval of an insufficiently staffed Ministry of Ecomomic Affairs. More recently the failure of residential/commercial demand to expand as expected has undermined the plans of Gasunie - and the size of the revenues expected by the government from the profits on gas production (the marginal tax rate on the Groningen field is about 95% and on other fields about 80%).

All these factors have combined to produce a situation in which the motivation to find additional gas has been undermined. In spite of this the offshore search in particular has been successful with a total to date of some 60 discoveries. Of these only a handful are producing and as many again in the process of being developed for production (for the reasons given above) and this has had the effect of limiting the apparent growth of Dutch reserves.

Official reserves figures for offshore gas refer only to fields in production or development. Reserves in all other discoveries are ignored. Very recently (in mid February this year) the new Minister of Economic Affairs finally admitted, for the first time ever, that Dutch reserves are bigger than those officially declared and he said that plans for the future should also take "future expectations of discoveries" into account. This represents a total volte face for policy planners. He went on to say that as a consequence imports of gas are not really necessary and that additional imports (other than those already agreed with Norway) will no longer be sought. This major change in attitude has been accompanied by measures to expand the use of gas in the Netherlands by increasing use in power generation and by changing the policy of not renewing contracts for gas supply to industrial users. A more reasonable attitude to the depletion of known measures and a stimulus to the discovery of new reserves is now well under way.

4.4 The United Kingdom

Long-lived and continuing unhappy (even worsening) relationships and misunderstandings between oil companies, the British Gas Corporation and the British government provide the background to the failure of the U.K. natural gas supply to develop to the level that could reasonablly have been expected from the reserves discovered to date and from the potential remaining to be discovered. Prior to the present Chairman of B.G.C. the State gas corporation was run by those who thought that absolute success would have been achieved when the use of natural gas in the economy reached a level of 40 x $10^9 m^3$ (1.5 TCF) per year. The Corporation was thus interested only in securing access to reserves which enabled it to achieve this fixed objective. As a consequence the B.G.C. failed to offer reasonable financial incentives - post 1973 - for the oil industry to find or to exploit additional gas from the U.K. sector of the North Sea. As a result the B.G.C. had to agree to purchase gas from the largely Norwegian Frigg field at a price some 4 to 5 times higher than the price it was prepared to pay for additional U.K. sector gas!

Thus, the Southern part of the U.K.'s sector of the North Sea has not been explored or exploited beyond that which has been achieved by the late 1960s. Though prices offered by the B.G.C. for gas from the area have recently been increased (to a reported $3.0 per million BTU delivered U.K. coast) they still do not offer an attractive proposition to most oil companies with potential reserves there. These reserves (amounting to at least as much gas again as that remaining in the partially depleted fields) thus remain unutilized.

Hostility between the B.G.C. and the oil companies has, meanwhile, extended to the associated (and some non-associated) reserves in the central and northern parts of the U.K. North Sea. The result was the failure of the parties concerned - including the government and City financial institutions - to agree on the conditions for developing an extensive gas gathering system to enable their reserves to be produced. Upwards of 400×10^9 m^3 (15 TCF) of reserves thus still await the development of an infrastructure to bring them to shore. The companies do not show any great degree of urgency over this as they prefer to await the legislation (to be passed, if all goes well, in the present session of parliament) which eliminates the B.G.C.'s monopsony powers and so opens up the prospects for the oil companies themselves using (or selling) the gas. Meanwhile, the B.G.C. is more concerned with opposing the proposed legislation than with actively seeking to provide a system for enabling the reserves available to be produced. The government, because of fears for the impact of any state expenditures involved in developing the production/transportation system required on the Public Sector Borrowing Requirement (in the context of governmental commitment to monetarist philosophies and principles) has not wanted to become involved directly or even to create conditions in which others would be able to get involved.

Successive governments have also had other powerful motivations not to encourage more rapid gas resources development.

First, there is a recognition that too much gas would undermine policies designed to support the British coal industry and/or nuclear power developments. Second, there has been an unwillingness to consider the inter-connection of the U.K. gas system with that of the rest of Western Europe and a refusal to sell British gas into neighbouring European countries. Most recently, B.G.C. industrial gas pricing policy (to sell it at gasoil equivalent prices plus a premium) and a government requirement that residential gas prices be increased by more than inflation to parity with higher cost oil products have thwarted the anticipated expansion of the domestic market. The outlook for any significent expansion in gas use is now severely limited - unless, under the new legislation, the producing companies seek actively to supply industrial energy users on an extensive scale and this is by no means certain.

To date, the U.K. has not come under much pressure from other Western European countries or the E.E.C. to change its policies. This is partly because of the lack of knowledge/understanding of the U.K.'s gas export potential and partly because of a less than 100% degree of confidence by potential purchasers in Britian's ability/willingness to supply on a continuing basis. This lack of confidence in British attitudes/abilities was a major consideration in Norway's decision not to build a gas line to the European mainland via the U.K. Such a decision could have enabled more Norwegian gas to be available in Europe earlier than with the adopted alternative option of an all-Norwegian line via the length of the North Sea. It would also have meant that British sector gas could have been collected en route to landfall in Scotland and so added even more gas to the potential supply.

4.5 Norway

In terms of present and, even more so, of near future volumes of reserves discovered, Norway has by far and away the greatest scope for expanded output The potential 1985 reserves shown in the Table (of more than 5000 x $10^9 m^3$ or 190 TCF) are the minimum likely while the 50 x 10^9 m^3 (1.9 TCF)

peak production level for post - 1985 is one which is higher than the level achievable from firm plans already made. Even at this higher level, however, Norway will have an R/P ratio in excess of 100 years.

The essential element in the failure of Norway to evolve production policy more consistent with the size of the resources available has been the firm national policy decision to restrict future total oil and gas production to 90 million tons of oil equivalent per year (compared with about 50 million tons at present). However, the new Conservative Government's Oil and Energy Minister, Vidkunn Hveding, stated in March 1982 that there is no longer a fixed limit and that a Study Commission will work out the optimum rate for the Norwegian economy. It is of course still argued that the strength of the economy is being and will increasingly be, undermined by the oil and gas sector. Apart from the feared macro-economic effects (in terms of the impact of oil/gas exports on the strength/value of the Norwegian Krone; on wage rates and hence on other activities, notably manufacturing industry), there is also concern for regional socio-economic impacts of large scale hydrocarbons production (impacts such as the undermining of the Norwegian rural way of life in the little populated west and north and on fishing and associated activities in these regions of the country).

Norway, as a little populated country with an already high standard of living and a generally efficient use of energy, claims that it has been generous in its oil and gas developments - with exports accounting for up to 80% of total production. It has also endeavoured - relatively successfully - to keep the industry Norwegian - both in ownership and operation, through the state oil company, Statoil, and a number of private companies, notably Norsk Hydro. To go faster or futher would mean its resources being developed in a mode tantamount to economic imperialism (development by non-Norwegian companies employing non-Norwegian labour and other factors of production and for the benefit of the exploiting countries).

There is also a widely held belief in the idea of a world scarcity of energy resources - especially oil and gas - so that Norway is ethically right to save the resources it does not need for future generations in an energy - short world. Norway's voters decided to keep their country out of the E.E.C. and it thus has no commitment to European investment/employment/access to production on the same terms as those extended to Norwegian investments. Neither has Norway appeared to recognise the validity of any argument which stresses its exposure to Soviet influence (through the presence of undeveloped, valuable resources) or its requirement to serve NATO through additional oil and gas production. Its policy overall has been intensely, nationalistic - extending even to its relations with its closest allies in the Nordic Council - although this may be changing somewhat with the new Government.

There are a number of minor issues involved in attitudes to expanding gas production to higher levels. First, Statoil is more interested in oil and operates as a pressure group against greater priority for gas. As part of the new Government's more flexible policy, however, control of the concessions (and the collection of oil taxes) will be transferred from Statoil to the Government. Second, one must recognise the difficulties and complexities of developing expanded facilities in the northern part of the North Sea and in northern Norway offshore conditions. It is "frontier of technology" stuff and "making haste slowly" is an accident minimization procedure - not only in respect of minimizing dangers to human life, but also pollution danger to the marine and coastal environments.

5. POSSIBLE US POLICY STEPS TO ENCOURAGE ADDITIONAL WEST EUROPEAN GAS PRODUCTION

5.1 The US should make efforts to persuade Western Europe of the wealth of its oil and gas resources and of the long-lived nature of the depletion process of a large province under active exploration and development. It should try to establish a climate of opinion in which there is a greater readiness of West European governments to increase indigenous production of oil and gas.

5.2 US agencies should attempt to produce (or cause to have produced) a West European integrated plan for the rational depletion of the continent's reserves. This involves facilities and transport infrastructure but also inter-country guarantees for covering temporal variations in achievable production levels for various N W European countries.

5.3 In terms of political action, initial efforts should be concentrated on the Netherlands where, as indicated in Section 4.3 above, there has just been a change in policy attitudes on the use of the country's gas reserves. The re-evaluation of the availability of reserves not only ensures the ability to increase domestic use but also to increase exports to Belgium and Germany. The US should work out a scheme whereby the Netherlands is guaranteed replacement supplies at no greater real cost, if such replacements eventually prove to be necessary in the longer term to serve Dutch needs.

5.4 Pressure should be brought to bear on the UK to implement enhanced gas production from the southern North Sea and gas gathering systems for available reserves from the central and northern parts of the North Sea. Any suggestions will need to ensure that these prospects can be financed with no effect on the P S B R. This pressure should be accompanied by efforts to persuade the UK to abandon its policy of preventing gas exports. In particular the efforts should emphasize the development of a gas delivery system across the Channel to France and Belgium. Britain, as with the Netherlands, should also be guaranteed longer term replacement gas supplies at no higher real costs than those provided for export in the near future.

5.5 Norway requires to be persuaded to take a quick decision, and to establish the possibilities of a speedy implementation of the decision, for making a supply of gas available sufficient to fill the capacity of the Ekofisk and then the new Danish offshore/ cross-country gas trunkline - or even enough gas to sustain investment in enhanced capacity in the line, if this is possible. The objective would be to provide additional gas for Denmark and for Sweden and W Germany via the links in the system.

5.6 A joint proposal should be made to Norway and the UK for the construction, as soon as possible, of production and transportation facilities for gas from the Sleipner area (Blocks 15/5, 6, 8 and 9) of the Norwegian sector and from fields in adjacent locations in the UK sector. This would be transported to the east coast of Scotland and thus into the UK grid to provide the additional gas required for exports from the UK to the European mainland (see 5.4 above).

5.7 Norway should be pressured to allow up to 80 x 10^9 m^3 (3.0 TCF) peak annual gas production (instead of 50 or 1.9 TCF). The falling real price of oil - and hence the falling real value of gas - will mean that Norway needs to produce more to fulfil its objectives and this should be emphasized : as should the fact that the additional production need not have any significant effects on Norwegian social and socio-economic issues as the work and the financing could, if necessary, be done "offshore", but under Norwegian control and regulation so that fears of "economic imperialism" can be allayed.

5.8 There should be pressure on West Germany to persuade it to concentrate its attention on gas supplies from near neighbours rather than from the Soviet Union. The key role of Ruhrgas in this process and its position as the market leader on such questions should be emphasised.

5.9 The US should ensure that US representatives/staff at the IEA in Paris toughen up their stand on the opportunities for a much bigger contribution from West European gas resources to the region's energy needs. Such views were expressed in the 1980 Review (published June 1981) but in a very muted way. Attempts should be made to see that less emphasis in IEA's analyses/publications/presentations is put on Europe's energy supply difficulties as these simply serve to encourage limitations on indigenous oil and gas production. More stress should be put on the opportunities for expanded supplies from European countries.

5.10 An attempt should be made to knock some rationality and reasonableness into EEC analyses and recommendations on energy policy. Its single-minded pursuit of the expansion of nuclear power curbs its effectiveness and is clearly the pursuit of the unattainable. The EEC needs to be persuaded that Western Europe's own hydrocarbons are the single most important positive factor in the region's energy prospects. Perhaps 'friendly' members of the European Parliament could be persuaded to help in this respect.

5.11 Consideration should be given clandestinely to sponsor (or support) an organization in Western Europe dedicated to promoting the concept of an Energy Independent Western Europe - to parallel the "Energy Independent US" groups. Perhaps an effort could be made to make European oil and gas opportunities a main theme of the 1983 London (50th Anniversary) meeting of the World Petroleum Congress.

5.12 US-based oil companies should be persuaded/encouraged to give highest priority to Western European gas developments as a matter of urgency. The companies ought to be able to offer advice on the most practicable and likely projects amongst those suggested in this study.

6. POLICIES TO INDUCE A SWITCH FROM SIBERIAN TO WESTERN SUBSTITUTE SOURCES

The project to supply gas from the Siberian part of the Soviet Union is seen in a politically favourable light by the governments of West Germany, France, Italy and Belgium. All these countries, and in particular, West Germany, consider that diversification of energy supplies contributes to greater security and will reduce dependence on OPEC oil. Orders for equipment from the Soviet Union will help to lighten the burden on the balance of payments (certainly compared with OPEC oil as an alternative). It is also felt that the quantity of Soviet gas contracted (now reduced, mainly because of lower demand estimates, from 40 x 10^9 m^3 (1.5 TCF) to 35 x 10^9 m^3 or 1.3 TCF) represents a minimal risk in the unlikely event of an interruption of supplies.

In order to counter these views, it will be necessary for the U.S. to demonstrate:

(a) that the probability of supplies interruption is far greater than at present thought by the West European governments involved

(b) that alternative sources of gas can be made available (if necessary with American help, and guarantees of supply replacement at the same real cost) from North West European sources

(c) that the economic benefits from increased North West European gas production outweigh the economic disadvantages of lost export orders from the Soviet Union

In our view, it will be extremely difficult to work up convincing arguments for points (a) and (c). It will, therefore, be necessary to concentrate activity on point (b), as set out in Section 5 above.

With regard to the specific attitudes of West German banks and trade unions to a switch in supplies, we feel that opposition is likely to come from individual firms planning to supply equipment to the

Soviet Union and banks to the extent that they are involved as shareholders or creditors of these firms. Our approaches to the Trade Union Federation in West Germany and to the Deutsche Bank as spokesman for the banking consortium revealed no official "line" from either party which was different from the government view described above. In fact, there was even a hint of a more cautious approach to the question of lending to the Soviet Union to finance equipment imports (as the two parts of the deal are normally considered separately) and a view that the originally foreseen credit of DM 10 mrd. (US$4.25 bn) would be used only to the extent of about DM 3 mrd. (US$1.3 bn).

It may therefore be appropriate to concentrate on a reduction of imports from the Soviet Union (possibly by restricting gas demand in industrial sectors through more substitution by coal) rather than total replacement from other sources.

TABLE 1

N.W. EUROPE: NATURAL GAS, PRODUCTION, RESERVES AND POTENTIAL

(all figures in standard $m^3 \times 10^9$ except R/P ratios, in years)

COUNTRY/ REGION	HISTORICAL PRODUCTION 1961	1971	1981 (est)	CUM.PROD TO 1981 (est)	REMAINING PROVEN PROBABLE RESERVES 1981	1981 RESERVES PROD. RATIO (YEARS)	CUM. PROD. 1982-1985	PLANNED 1985 PRODUCTION	LIKELY REMAINING RESERVES DISCOVERABLE BY 1985	PEAK ANNUAL PRODUCTION PLANNED 1985 - 1990	R/P RATIO (YEARS)	POTENTIAL PEAK ANNUAL PROD.IN 1985-1990	R/P RATIO (YEARS)	POTENTIAL PEAK ANNUAL ADD'L PROD.
Netherlands														
Onshore	5	45	70	850	1850	27	250	55	1750	75	28	105	25	+30
Offshore	-	-	10	40	325		65	20	400					
W. Germany														
Onshore	8	15	20	250	300	18	80	18	300	20	20	25	16	+ 5
Offshore	-	-	-	-	50		-	0	100					
Denmark														
Offshore	-	-	-	-	250	∝	15	5	400	10	40	15	27	+ 5
Norway														
N. Sea	-	-	25	90	1300	52	110	35	± 4000	50	>100	> 80	62	+>30
"Northern"	-	-	-	-	'substantial'	∝	-	-	> 1000					
UK*														
South N.S.	-	18	29	374	450	27	120	26	450	60	37	85	26	+25
Other	-	-	8	23	625		80	20	1750					
Ireland														
Offshore	-	-	1	3	40	40	6	2	75	3	25	5	15	+ 2
Totals	13	78	163	1630	>5190	>31	726	181	10225	218	47	>315	33	+97

* Including U.K. share of Norwegian Fields

TABLE 1A

N.W. EUROPE: NATURAL GAS PRODUCTION, RESERVES AND POTENTIAL

(TABLE 1 CONVERTED TO TRILLION CUBIC FEET AT 0.03723)

[redacted]TRY/ ON	HISTORICAL PRODUCTION 1961	1971	1981 (est.)	CUM. PROD. TO 1981 (est.)	REMAINING PROVEN/ PROBABLE RESERVES 1981	1981 RESERVES/ PROD. RATIO (YEARS)	CUM. PROD. 1982 - 1985	PLANNED 1985 PRODUCTION	LIKELY REMAINING RESERVES DISCOVERABLE BY 1985	PEAK ANNUAL PRODUCTION PLANNED 1985-1990	R/P RATIO (YEARS)	POTENTIAL PEAK ANNUAL PROD. IN 1985 - 1990	R/P RA. (YEAR.	POTENTIAL PEAK ANNUAL ADDIT. PROD.
Netherlands														
[redacted]On[redacted]hore	0.19	1.68	2.61	31.65	68.9	)	9.3	2.0	65.2	)				
[redacted]hore	-	-	0.37	1.49	12.1	) 27	2.4	0.7	14.9	)	2.8	28	3.9	25	+1.1
[redacted]ermany														
[redacted]ore	0.30	0.56	0.74	9.31	11.2	)	3.0	0.7	11.2	)				
Offshore	-	-	-	-	1.9	) 18	-	-	3.7	)	0.7	20	0.9	16	+0.2
[redacted]mark														
Offshore	-	-	-	-	9.3	∝	0.6	0.2	14.9		0.4	40	0.6	27	+0.2
[redacted]rway														
N. Sea	-	-	0.93	3.35	48.4	52	4.1	1.3	±148.9	)					
[redacted]thern"	-	-	-	-	"substantial"	∝	-	-	>37.2	)	1.9	>100	>3.0	62	+>1.1
United Kingdom *														
[redacted]hern [redacted]ea	-	0.67	1.08	13.92	16.8	)	4.5	1.0	16.8	)					
Other Offshore	-	-	0.30	0.86	23.3	) 27	3.0	0.7	65.2	)	2.2	37	3.2	26	+1.0
[redacted]and														
Offshore	-	-	0.04	0.11	1.5	40	0.2	0.1	2.8		0.1	25	0.2	15	+0.1
[redacted]ls	0.49	2.91	6.07	60.69	>193.4	>31	27.1	6.7	380.8		9.1	47	>11.8	33	3.7

* Including United Kingdom share of Norwegian Fields

[redacted]CF figures rounded to one decimal place after 1981